

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently amended): A method of pre-equalizing a transmission characteristic of a signal processing circuitry-(200), said method comprising the steps of:

- a) obtaining a difference between an output signal of said signal processing circuitry (200) and an input signal of an pre-equalizing function (15);
- b) approximating a gradient of said difference based on said obtained difference and an approximation of said transmission characteristic; and
- c) updating control values of said equalizing function (15) based on said approximated gradient.

2. (Original): A method according to claim 1, wherein said approximating step comprises the step of calculating an approximation of a least mean square gradient vector of said difference.

3. (Original): A method according to claim 2, wherein said gradient vector is calculated from a partial differential equation of a system cost function.

4. (Currently amended): A method according to ~~any one of the preceding claims~~ claim 1, wherein said difference is obtained by comparing signal envelopes of said output and input signals.

5. (Original): A method according to claim 4, wherein said input signal is a digital signal and said output signal is an analog signal.

6. (Currently amended): A method according to ~~any one of the preceding claims~~ claim 1, wherein said control values are coefficients of an adaptive digital filter.

7. (Currently amended): A method according to ~~any one of the preceding~~ claims claim 1, wherein said transmission characteristic is approximated as a delay function.

8. (Original): A method according to claim 7, wherein the delay of said delay function corresponds to the position of the maximum analog filter peak of said transmission characteristic.

9. (Original): A method according to claim 8, wherein said gradient vector is calculated using the following equation:

$$\nabla\{E\} = -2e[k] \cdot \underline{d}[k - \tau],$$

wherein

$\nabla\{E\}$  denotes said gradient vector,

$e[k]$  denotes said obtained difference, and

$\underline{d}[k - \tau]$  denotes a vector representation of said input signal assessed by said delay approximation of said transmission characteristic.

10. (Original): A method according to claim 9, wherein filter coefficients are updated in said updating step based on the following equation:

$$\underline{w}[k + 1] = \underline{w}[k] + \mu e[k] \cdot \underline{d}[k - \tau],$$

wherein

$\underline{w}[k + 1]$  denotes a vector representation of updated filter coefficients,

$\underline{w}[k]$  denotes a vector representation of current filter coefficients, and

$\mu$  denotes a predetermined proportionality factor.

11. (Currently amended): An apparatus for pre-equalizing a transmission characteristic of a signal processing circuitry (200), said apparatus comprising:

a) comparing means (71) for obtaining a difference between an output signal of said signal processing circuitry (200) and an input signal of an pre-equalizing means (15);

b) approximation means (72) for approximating a gradient of said difference based on said obtained difference and an approximation of said transmission characteristic; and

c) updating means (72) for obtaining control values supplied to said pre-equalizing means (15), based on said approximated gradient.

12. (Currently amended): An apparatus according to claim 11, wherein said comparing means (71) are arranged to compare said input and output signals based on their envelopes.

13. (Currently amended): An apparatus according to claim 11 ~~or 12~~, wherein said approximation means (72) is arranged to approximate said transmission characteristic as a delay function and to approximate said gradient by using a least mean square approximation function.

14. (Currently amended): An apparatus according to ~~any one of claims 11 to 13~~ claim 11, wherein said signal processing circuitry is a direct conversion or heterodyne transmitter architecture (200).

15. (Currently amended): An apparatus according to ~~any one of claims 11 to 14~~ claim 11, wherein said apparatus comprises a digital pre-equalizer means (15).